104534449 Rec'd PCT/PTÓ 09 MAY 2005

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property **Organization**

International Bureau



(43) International Publication Date 27 May 2004 (27.05.2004)

PCT

(10) International Publication Number WO 2004/044615 A2

(51) International Patent Classification7:

G01V 1/00

(21) International Application Number:

PCT/US2003/036219

(22) International Filing Date:

10 November 2003 (10.11.2003)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

60/424,937

9 November 2002 (09.11.2002) US

(71) Applicant (for all designated States except US): GEOEN-ERGY, INC. [US/US]; President Vassiliou, Anthony. A., 3000 Wilcrest Dr., Ste. 241, Houston, TX 77042 (US).

- (72) Inventors; and
- (75) Inventors/Applicants (for US only): COHEN, Israel

[IL/IL]; 17 Lea Street, 34403 Haifa (IL). VASSILIOU, Anthony [GR/US]; GeoEnergy, Inc., 3000 Wilcrest Dr., Ste 241, Houston, TX 77042 (US). COULT, Nicholas [US/US]; 2521 Irving Ave S, Minneapolis, MN 55405 (US).

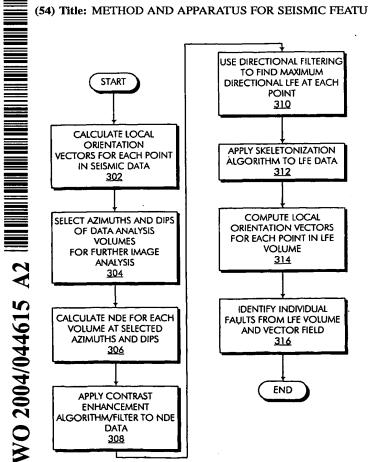
- (74) Agent: NICHOLS, Michael; Law Office of Michael R. Nichols, PMB #155, 3001 S. Hardin Blvd., Ste 110, McKinney, TX 75070 (US).
- (81) Designated State (national): US.
- (84) Designated States (regional): European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR).

Declarations under Rule 4.17:

as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR)

[Continued on next page]

(54) Title: METHOD AND APPARATUS FOR SEISMIC FEATURE EXTRACTION



(57) Abstract: A method and apparatus for seismic image processing is disclosed. A preferred embodiment aids in the identification of subterranean faults, which are significant in hydrocarbon exploration. The method includes steps of: a) reading a three dimensional seismic data volume; b) computing the three-dimensional orientation of the subsurface: c) subdividing the original volume into small data volumes that are rotated at a predetermined set of dips and azimuths related to those of the subsurface orientation; d) computing a 3-D edge detection measure on the small volumes formed in step c; e) performing a 3-D contrast enhancement operation in each of the small volumes; f) filtering the result of the contrast enhancement with selected 3-D filters at the predetermined set of dips and azimuths; g) skeletonizing the results of the filtering operation; h) separating the individual fault surfaces, and i) labelling the individual fault surfaces for further interpretation and exploration.